

WHAT IS CLAIMED IS:

Sub 7 1. An ink for an ink jet comprising a coloring composition comprising:

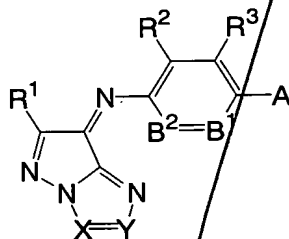
(a) a dispersion medium; and

(b) coloring particulates comprising:

(b-1) a polymer which is selected from the group consisting of polyurethanes, polyesters, polyamides, polyureas and polycarbonates; and

(b-2) an oil-soluble dye represented by formula (1):

Formula (1)



wherein R¹ represents a hydrogen atom, aliphatic group, aromatic group, heterocyclic group, cyano, -OR¹¹, -SR¹², -CO₂R¹³, -OCOR¹⁴, -NR¹⁵R¹⁶, -CONR¹⁷R¹⁸, -SO₂R¹⁹, -SO₂NR²⁰R²¹, -NR²²CONR²³R²⁴, -NR²⁵CO₂R²⁶, -COR²⁷, -NR²⁸COR²⁹ or -NR³⁰SO₂R³¹, and R¹¹, R¹², R¹³, R¹⁴, R¹⁵, R¹⁶, R¹⁷, R¹⁸, R¹⁹, R²⁰, R²¹, R²², R²³, R²⁴, R²⁵, R²⁶, R²⁷, R²⁸, R²⁹, R³⁰ and R³¹ each represents independently a hydrogen atom, aliphatic group or

aromatic group; wherein A represents $-NR^4R^5$ or a hydroxyl group, and R^4 and R^5 each represents independently a hydrogen atom, aliphatic group, aromatic group or heterocyclic group; wherein B^1 represents $=C(R^6)-$ or $=N-$ and B^2 represents $-C(R^7)=$ or $-N=$; wherein R^2 , R^3 , R^6 and R^7 each represents independently a hydrogen atom, halogen atom, aliphatic group, aromatic group, heterocyclic group, cyano, $-OR^{51}$, $-SR^{52}$, $-CO_2R^{53}$, $-OCOR^{54}$, $-NR^{55}R^{56}$, $-CONR^{57}R^{58}$, $-SO_2R^{59}$, $-SO_2NR^{60}R^{61}$, $-NR^{62}CONR^{63}R^{64}$, $-NR^{65}CO_2R^{66}$, $-COR^{67}$, $-NR^{68}COR^{69}$ or $-NR^{70}SO_2R^{71}$, and R^{51} , R^{52} , R^{53} , R^{54} , R^{55} , R^{56} , R^{57} , R^{58} , R^{59} , R^{60} , R^{61} , R^{62} , R^{63} , R^{64} , R^{65} , R^{66} , R^{67} , R^{68} , R^{69} , R^{70} and R^{71} each represents independently a hydrogen atom, aliphatic group or aromatic group; wherein R^2 and R^3 , R^3 and R^4 , R^4 and R^5 , R^5 and R^6 , or R^6 and R^7 may be mutually bound to form a ring; wherein X and Y each represents independently $C(R^8)=$ or $N=$, R^8 represents a hydrogen atom, aliphatic group or aromatic group, either X or Y shall represent $N=$, and X and Y shall not be simultaneously $-N=$; and wherein the formula (1) satisfies at least one of following (i) to (v):

(i) A represents $-NR^4R^5$, R^4 and R^5 each represents independently a C_{1-18} alkyl group having a substituent group, the substituent group is at least one member selected from the group consisting of a heterocyclic group, cyano, $-OR^{141}$, $-SR^{142}$, $-CO_2R^{143}$, $-OCOR^{144}$, $-NR^{145}R^{146}$, -

Sub
R¹
Cont.

$\text{CONR}^{147}\text{R}^{148}$, $-\text{SO}_2\text{R}^{149}$, $-\text{SO}_2\text{NR}^{150}\text{R}^{151}$, $-\text{NR}^{152}\text{CONR}^{153}\text{R}^{154}$, $-\text{NR}^{155}\text{CO}_2\text{R}^{156}$,
 $-\text{COR}^{157}$, $-\text{NR}^{158}\text{COR}^{159}$ and $-\text{NR}^{160}\text{SO}_2\text{R}^{161}$, and R^{141} , R^{142} , R^{143} , R^{144} , R^{145} ,
 R^{146} , R^{147} , R^{148} , R^{149} , R^{150} , R^{151} , R^{152} , R^{153} , R^{154} , R^{155} , R^{156} , R^{157} , R^{158} , R^{159} , R^{160}
and R^{161} each represents independently a hydrogen atom, aliphatic group
or aromatic group;

(ii) R^2 represents a substituted alkyl group;

(ii)' R^7 represents a substituted alkyl group;

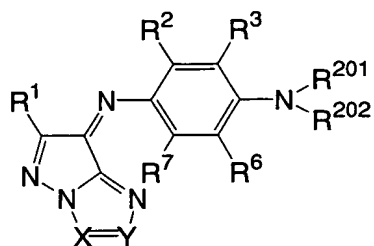
(iii) R^8 represents an aryl group having 2 or more substituent
groups;

(iv) Two or more substituent groups represented by $-\text{NR}^{170}\text{SO}_2\text{R}^{171}$
are present in the molecule, and R^{170} and R^{171} each represents
independently a hydrogen atom, aliphatic group or aromatic group; and

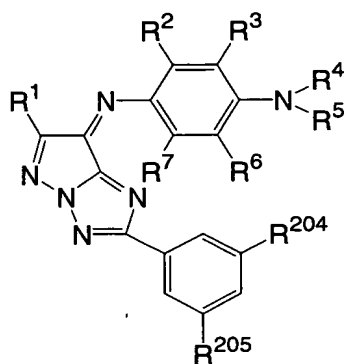
(v) One or more carboxyl groups are present in the molecule.

2. An ink for an ink jet according to claim 1, wherein the oil-
soluble dye is at least one compound represented by any one of formulae
(2-1) to (2-5):

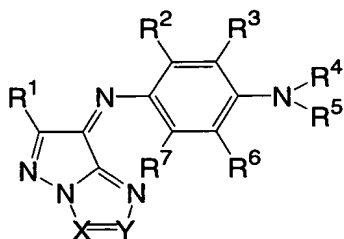
(2-1)



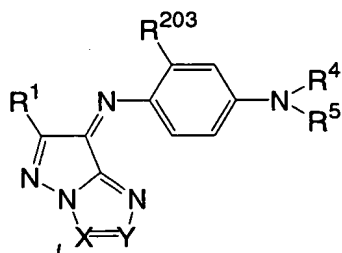
(2-3 a)



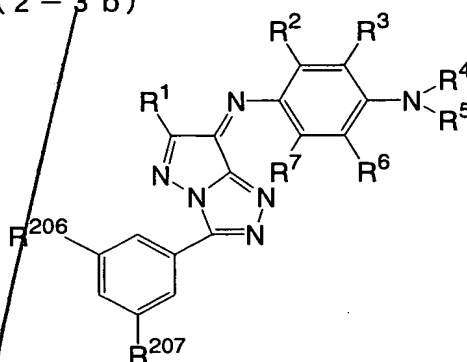
(2-4)



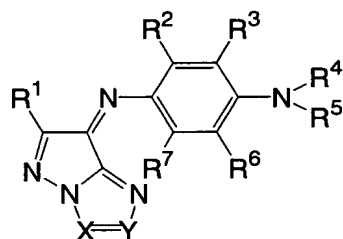
(2-2)



(2-3 b)



(2-5)



wherein in the formulae (2-1) to (2-5) X, Y, R¹, R², R³, R⁴, R⁵, R⁶, R⁷ and R⁸ have the same meanings as defined above in the formula (1);
wherein in the formula (2-1) R²⁰¹ and R²⁰² each represents a C₁₋₁₈ alkyl group having a substituent group, the substituent group is at least one member selected from the group consisting of a heterocyclic group, cyano, -OR¹⁴¹, -SR¹⁴², -CO₂R¹⁴³, -OCOR¹⁴⁴, -NR¹⁴⁵R¹⁴⁶, -CONR¹⁴⁷R¹⁴⁸, -

$\text{SO}_2\text{R}^{149}$, $-\text{SO}_2\text{NR}^{150}\text{R}^{151}$, $-\text{NR}^{152}\text{CONR}^{153}\text{R}^{154}$, $-\text{NR}^{155}\text{CO}_2\text{R}^{156}$, $-\text{COR}^{157}$, $-\text{NR}^{158}\text{COR}^{159}$ and $-\text{NR}^{160}\text{SO}_2\text{R}^{161}$, and R^{141} , R^{142} , R^{143} , R^{144} , R^{145} , R^{146} , R^{147} , R^{148} , R^{149} , R^{150} , R^{151} , R^{152} , R^{153} , R^{154} , R^{155} , R^{156} , R^{157} , R^{158} , R^{159} , R^{160} and R^{161} each represents independently a hydrogen atom, aliphatic group or aromatic group; wherein in the formula (2-2) R^{203} represents a C_{1-10} substituted alkyl group; wherein in the formulae (2-3a) and (2-3b), R^{204} , R^{205} , R^{206} and R^{207} each represents independently a cyano or a group having no more than C_{100} selected from the group consisting of an aliphatic group, aromatic group, heterocyclic group, $-\text{OR}^{211}$, $-\text{SR}^{212}$, $-\text{CO}_2\text{R}^{213}$, $-\text{OCOR}^{214}$, $-\text{NR}^{215}\text{R}^{216}$, $-\text{CONR}^{217}\text{R}^{218}$, $-\text{SO}_2\text{R}^{219}$, $-\text{SO}_2\text{NR}^{220}\text{R}^{221}$, $-\text{NR}^{222}\text{CONR}^{223}\text{R}^{224}$, $-\text{NR}^{225}\text{CO}_2\text{R}^{226}$, $-\text{COR}^{227}$, $-\text{NR}^{228}\text{COR}^{229}$ and $-\text{NR}^{230}\text{SO}_2\text{R}^{231}$, and R^{211} , R^{212} , R^{213} , R^{214} , R^{215} , R^{216} , R^{217} , R^{218} , R^{219} , R^{220} , R^{221} , R^{222} , R^{223} , R^{224} , R^{225} , R^{226} , R^{227} , R^{228} , R^{229} , R^{230} and R^{231} each represents independently a hydrogen atom, aliphatic group or aromatic group; wherein in the formula (2-4) at least one of R^1 , R^2 , R^3 , R^4 , R^5 , R^6 , R^7 and R^8 has substituent groups represented by $-\text{NR}^{271}\text{SO}_2\text{R}^{272}$, two or more substituent groups represented by $-\text{NR}^{271}\text{SO}_2\text{R}^{272}$ are contained in the molecule, and R^{271} and R^{272} each represents independently a hydrogen atom, aliphatic group or aromatic group; and wherein in the formula (2-5) at least one of R^1 , R^2 , R^3 , R^4 , R^5 , R^6 , R^7 and R^8 has one or more water-soluble groups.

3. An ink for an ink jet according to claim 1, wherein in the formula (1) R^1 represents hydrogen, C_{1-6} alkyl group or C_{1-6} substituted alkyl group.

4. An ink for an ink jet according to claim 1, wherein in the formula (1) X is $-N=$ and Y is $-C(R^8)=$.

5. An ink for an ink jet according to claim 1, wherein in the formula (1) B^1 is $=C(R^6)-$ and B^2 is $-C(R^7)=$.

6. An ink for an ink jet according to claim 1, wherein the formula (1) satisfies at least one of (i), (ii) and (ii)'.

7. An ink for an ink jet according to claim 1, wherein the formula (1) satisfies (i) and (iv).

8. An ink for an ink jet according to claim 1, wherein the polymer includes 0.01 to 3.0 mmol/g of an ionic group.

9. An ink for an ink jet according to claim 1, wherein the polymer includes 0.01 to 3.0 mmol/g of an ionic group, and the coloring composition is formed by emulsifying and dispersing coloring particulates which contain said polymer and the oil-soluble dye represented by formula (1) in a water-based dispersion medium.

10. An ink for an ink jet according to claim 1, wherein the polymer contains at least one kind of ionic group selected from carboxyl groups and sulfonate groups.

11. An ink for an ink jet according to claim 1, wherein the polymer is polyurethane or polyester.

Sub. A's 7
12. An ink for an ink jet according to claim 1, wherein the coloring particulates are obtained by emulsifying and making into fine particles an organic solvent which includes the polymer and the oil-soluble dye, by one of adding water to the organic solvent, and adding the organic solvent into water.

13. An ink for an ink jet according to claim 1, wherein the ink

has a wavelength of maximum absorption ($\lambda_{\max}(\text{nm})$) in a wavelength range from 510 to 560 nm; and when absorbance at λ_{\max} is regarded as 1, the absorbance is no less than 0.2 at ($\lambda_{\max} + 75\text{nm}$), and the absorbance is no more than 0.4 at ($\lambda_{\max} - 75\text{nm}$).

14. An ink for an ink jet according to claim 13, wherein the absorbance is no less than 0.1 at ($\lambda_{\max} + 75\text{nm}$), and the absorbance is no more than 0.3 at ($\lambda_{\max} - 75\text{nm}$).

Sub 3
15. A coloring composition comprising:

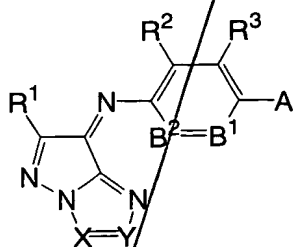
(a) a dispersion medium; and

(b) coloring particulates comprising:

(b-1) a polymer which is selected from the group consisting of polyurethanes, polyesters, polyamides, polyureas and polycarbonates; and

(b-2) an oil-soluble dye represented by formula (1):

Formula (1)



wherein R^1 represents a hydrogen atom, aliphatic group, aromatic group, heterocyclic group, cyano, $-OR^{11}$, $-SR^{12}$, $-CO_2R^{13}$, $-OCOR^{14}$, $-NR^{15}R^{16}$, $-CONR^{17}R^{18}$, $-SO_2R^{19}$, $-SO_2NR^{20}R^{21}$, $-NR^{22}CONR^{23}R^{24}$, $-NR^{25}CO_2R^{26}$, $-COR^{27}$, $-NR^{28}COR^{29}$ or $-NR^{30}SO_2R^{31}$, and R^{11} , R^{12} , R^{13} , R^{14} , R^{15} , R^{16} , R^{17} , R^{18} , R^{19} , R^{20} , R^{21} , R^{22} , R^{23} , R^{24} , R^{25} , R^{26} , R^{27} , R^{28} , R^{29} , R^{30} and R^{31} each represents independently a hydrogen atom, aliphatic group or aromatic group; wherein A represents $-NR^4R^5$ or a hydroxyl group, and R^4 and R^5 each represents independently a hydrogen atom, aliphatic group, aromatic group or heterocyclic group; wherein B^1 represents $=C(R^6)-$ or $=N-$ and B^2 represents $-C(R^7)=$ or $-N=$; wherein R^2 , R^3 , R^6 and R^7 each represents independently a hydrogen atom, halogen atom, aliphatic group, aromatic group, heterocyclic group, cyano, $-OR^{51}$, $-SR^{52}$, $-CO_2R^{53}$, $-OCOR^{54}$, $-NR^{55}R^{56}$, $-CONR^{57}R^{58}$, $-SO_2R^{59}$, $-SO_2NR^{60}R^{61}$, $-NR^{62}CONR^{63}R^{64}$, $-NR^{65}CO_2R^{66}$, $-COR^{67}$, $-NR^{68}COR^{69}$ or $-NR^{70}SO_2R^{71}$, and R^{51} , R^{52} , R^{53} , R^{54} , R^{55} , R^{56} , R^{57} , R^{58} , R^{59} , R^{60} , R^{61} , R^{62} , R^{63} , R^{64} , R^{65} , R^{66} , R^{67} , R^{68} , R^{69} , R^{70} and R^{71} each represents independently a hydrogen atom, aliphatic group or aromatic group; wherein R^2 and R^3 , R^3 and R^4 , R^4 and R^5 , R^5 and R^6 , or R^6 and R^7 may be mutually bound to form a ring; wherein X and Y each represents independently $C(R^8)=$ or $N=$, R^8

represents a hydrogen atom, aliphatic group or aromatic group, either X or Y shall represent N=, and X and Y shall not be simultaneously -N=; and wherein the formula (1) satisfies at least one of following (i) to (v):

(i) A represents $-NR^4R^5$, R^4 and R^5 each represents independently a C_{1-18} alkyl group having a substituent group, the substituent group is at least one member selected from the group consisting of a heterocyclic group, cyano, $-OR^{141}$, $-SR^{142}$, $-CO_2R^{143}$, $-OCOR^{144}$, $-NR^{145}R^{146}$, $-CONR^{147}R^{148}$, $-SO_2R^{149}$, $-SO_2NR^{150}R^{151}$, $-NR^{152}CONR^{153}R^{154}$, $-NR^{155}CO_2R^{156}$, $-COR^{157}$, $-NR^{158}COR^{159}$ and $-NR^{160}SO_2R^{161}$, and R^{141} , R^{142} , R^{143} , R^{144} , R^{145} , R^{146} , R^{147} , R^{148} , R^{149} , R^{150} , R^{151} , R^{152} , R^{153} , R^{154} , R^{155} , R^{156} , R^{157} , R^{158} , R^{159} , R^{160} and R^{161} each represents independently a hydrogen atom, aliphatic group or aromatic group;

(ii) R^2 represents a substituted alkyl group;

(ii)' R^7 represents a substituted alkyl group;

(iii) R^8 represents an aryl group having 2 or more substituent groups;

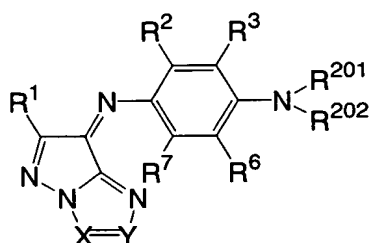
(iv) Two or more substituent groups represented by $-NR^{170}SO_2R^{171}$ are present in the molecule, and R^{170} and R^{171} each represents independently a hydrogen atom, aliphatic group or aromatic group; and

(v) One or more carboxyl groups are present in the molecule.

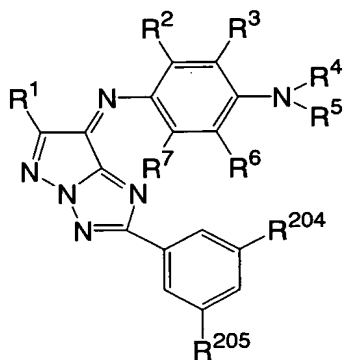
16. A coloring composition according to claim 15, wherein the oil-soluble dye is at least one compound represented by any one of

formulae (2-1) to (2-5):

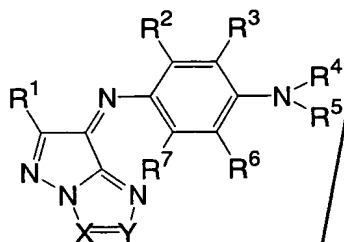
(2-1)



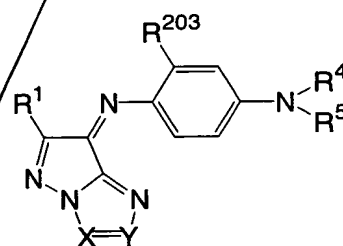
(2-3 a)



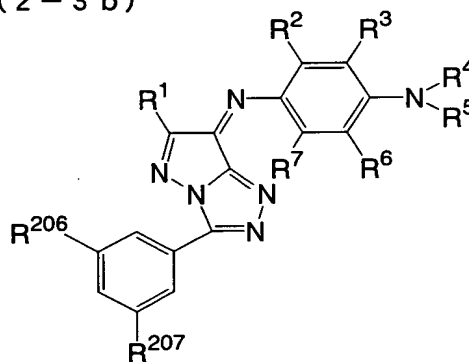
(2-4)



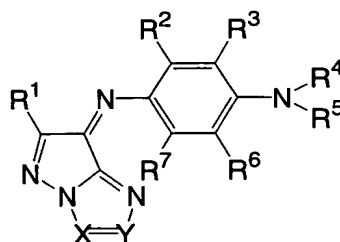
(2-2)



(2-3 b)



(2-5)



wherein in the formulae (2-1) to (2-5) X, Y, R¹, R², R³, R⁴, R⁵, R⁶, R⁷ and R⁸ have the same meanings as defined above in the formula (1);
wherein in the formula (2-1) R²⁰¹ and R²⁰² each represents a C₁₋₁₈ alkyl

group having a substituent group, the substituent group is at least one member selected from the group consisting of a heterocyclic group, cyano, $-OR^{141}$, $-SR^{142}$, $-CO_2R^{143}$, $-OCOR^{144}$, $-NR^{145}R^{146}$, $-CONR^{147}R^{148}$, $-SO_2R^{149}$, $-SO_2NR^{150}R^{151}$, $-NR^{152}CONR^{153}R^{154}$, $-NR^{155}CO_2R^{156}$, $-COR^{157}$, $-NR^{158}COR^{159}$ and $-NR^{160}SO_2R^{161}$, and R^{141} , R^{142} , R^{143} , R^{144} , R^{145} , R^{146} , R^{147} , R^{148} , R^{149} , R^{150} , R^{151} , R^{152} , R^{153} , R^{154} , R^{155} , R^{156} , R^{157} , R^{158} , R^{159} , R^{160} and R^{161} each represents independently a hydrogen atom, aliphatic group or aromatic group; wherein in the formula (2-2) R^{203} represents a C_{1-10} substituted alkyl group; wherein in the formulae (2-3a) and (2-3b), R^{204} , R^{205} , R^{206} and R^{207} each represents independently a cyano or a group having no more than C_{100} selected from the group consisting of an aliphatic group, aromatic group, heterocyclic group, $-OR^{211}$, $-SR^{212}$, $-CO_2R^{213}$, $-OCOR^{214}$, $-NR^{215}R^{216}$, $-CONR^{217}R^{218}$, $-SO_2R^{219}$, $-SO_2NR^{220}R^{221}$, $-NR^{222}CONR^{223}R^{224}$, $-NR^{225}CO_2R^{226}$, $-COR^{227}$, $-NR^{228}COR^{229}$ and $-NR^{230}SO_2R^{231}$, and R^{211} , R^{212} , R^{213} , R^{214} , R^{215} , R^{216} , R^{217} , R^{218} , R^{219} , R^{220} , R^{221} , R^{222} , R^{223} , R^{224} , R^{225} , R^{226} , R^{227} , R^{228} , R^{229} , R^{230} and R^{231} each represents independently a hydrogen atom, aliphatic group or aromatic group; wherein in the formula (2-4) at least one of R^1 , R^2 , R^3 , R^4 , R^5 , R^6 , R^7 and R^8 has substituent groups represented by $-NR^{271}SO_2R^{272}$, two or more substituent groups represented by $-NR^{271}SO_2R^{272}$ are contained in the molecule, and R^{271} and R^{272} each

Emb 3
A3
cut

represents independently a hydrogen atom, aliphatic group or aromatic group; and wherein in the formula (2-5) at least one of R^1 , R^2 , R^3 , R^4 , R^5 , R^6 , R^7 and R^8 has one or more water-soluble groups.

17. A coloring composition according to claim 15, wherein the coloring composition has a wavelength of maximum absorption (λ_{\max} (nm)) in a wavelength range from 510 to 560 nm; and when absorbance at λ_{\max} is regarded as 1, the absorbance is no less than 0.2 at ($\lambda_{\max} + 75$ nm), and the absorbance is no more than 0.4 at ($\lambda_{\max} - 75$ nm).

Emb 4
A4

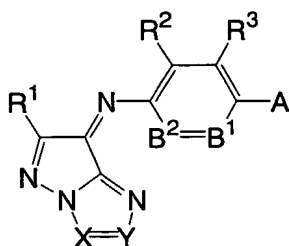
18. An ink jet recording method comprising the steps of:

- (1) preparing an ink for an ink jet; and
- (2) using the ink for recording in an ink-jet printing device;

wherein the ink comprising a coloring composition comprising:

- (a) a dispersion medium; and
- (b) coloring particulates comprising:
 - (b-1) a polymer which is selected from the group consisting of polyurethanes, polyesters, polyamides, polyureas and polycarbonates; and
 - (b-2) an oil-soluble dye represented by formula (1):

Formula (1)



wherein R^1 represents a hydrogen atom, aliphatic group, aromatic group, heterocyclic group, cyano, $-OR^{11}$, $-SR^{12}$, $-CO_2R^{13}$, $-OCOR^{14}$, $-NR^{15}R^{16}$, $-CONR^{17}R^{18}$, $-SO_2R^{19}$, $-SO_2NR^{20}R^{21}$, $-NR^{22}CONR^{23}R^{24}$, $-NR^{25}CO_2R^{26}$, $-COR^{27}$, $-NR^{28}COR^{29}$ or $-NR^{30}SO_2R^{31}$, and R^{11} , R^{12} , R^{13} , R^{14} , R^{15} , R^{16} , R^{17} , R^{18} , R^{19} , R^{20} , R^{21} , R^{22} , R^{23} , R^{24} , R^{25} , R^{26} , R^{27} , R^{28} , R^{29} , R^{30} and R^{31} each represents independently a hydrogen atom, aliphatic group or aromatic group; wherein A represents $-NR^4R^5$ or a hydroxyl group, and R^4 and R^5 each represents independently a hydrogen atom, aliphatic group, aromatic group or heterocyclic group; wherein B^1 represents $=C(R^6)-$ or $=N-$ and B^2 represents $-C(R^7)=$ or $-N=$; wherein R^2 , R^3 , R^6 and R^7 each represents independently a hydrogen atom, halogen atom, aliphatic group, aromatic group, heterocyclic group, cyano, $-OR^{51}$, $-SR^{52}$, $-CO_2R^{53}$, $-OCOR^{54}$, $-NR^{55}R^{56}$, $-CONR^{57}R^{58}$, $-SO_2R^{59}$, $-SO_2NR^{60}R^{61}$, $-NR^{62}CONR^{63}R^{64}$, $-NR^{65}CO_2R^{66}$, $-COR^{67}$, $-NR^{68}COR^{69}$ or $-NR^{70}SO_2R^{71}$, and R^{51} , R^{52} , R^{53} , R^{54} , R^{55} , R^{56} , R^{57} , R^{58} , R^{59} , R^{60} , R^{61} , R^{62} , R^{63} , R^{64} , R^{65} , R^{66} , R^{67} , R^{68} , R^{69} , R^{70} and R^{71} each represents independently a hydrogen atom, aliphatic group or aromatic group; wherein R^2 and R^3 , R^3 and R^4 , R^4 and

R^5 , R^5 and R^6 , or R^6 and R^7 may be mutually bound to form a ring;
 wherein X and Y each represents independently $C(R^8)=$ or $N=$, R^8
 represents a hydrogen atom, aliphatic group or aromatic group, either X
 or Y shall represent $N=$, and X and Y shall not be simultaneously $-N=$;
 and wherein the formula (1) satisfies at least one of following (i) to (v):

(i) A represents $-NR^4R^5$, R^4 and R^5 each represents independently
 a C_{1-18} alkyl group having a substituent group, the substituent group is at
 least one member selected from the group consisting of a heterocyclic
 group, cyano, $-OR^{141}$, $-SR^{142}$, $-CO_2R^{143}$, $-OCOR^{144}$, $-NR^{145}R^{146}$, -
 $CONR^{147}R^{148}$, $-SO_2R^{149}$, $-SO_2NR^{150}R^{151}$, $-NR^{152}CONR^{153}R^{154}$, $-NR^{155}CO_2R^{156}$,
 $-COR^{157}$, $-NR^{158}COR^{159}$ and $-NR^{160}SO_2R^{161}$, and R^{141} , R^{142} , R^{143} , R^{144} , R^{145} ,
 R^{146} , R^{147} , R^{148} , R^{149} , R^{150} , R^{151} , R^{152} , R^{153} , R^{154} , R^{155} , R^{156} , R^{157} , R^{158} , R^{159} , R^{160}
 and R^{161} each represents independently a hydrogen atom, aliphatic group
 or aromatic group;

(ii) R^2 represents a substituted alkyl group;

(ii)' R^7 represents a substituted alkyl group;

(iii) R^8 represents an aryl group having 2 or more substituent
 groups;

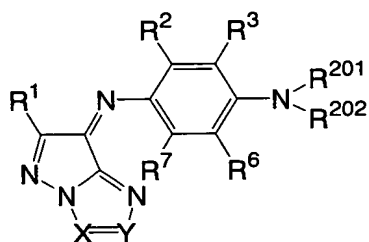
(iv) Two or more substituent groups represented by $-NR^{170}SO_2R^{171}$
 are present in the molecule, and R^{170} and R^{171} each represents

independently a hydrogen atom, aliphatic group or aromatic group; and

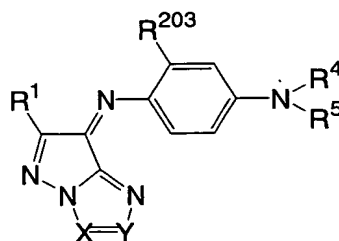
(v) One or more carboxyl groups are present in the molecule.

19. An ink jet recording method according to claim 18, wherein the oil-soluble dye is at least one compound represented by any one of formulae (2-1) to (2-5):

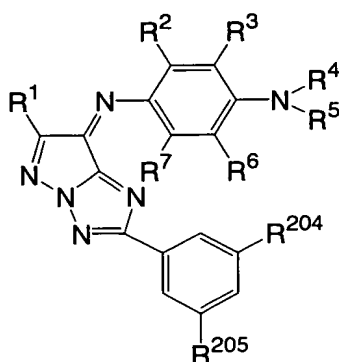
(2-1)



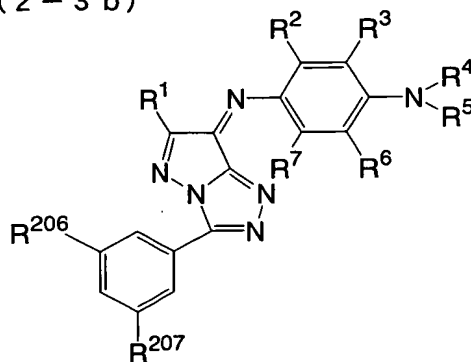
(2-2)



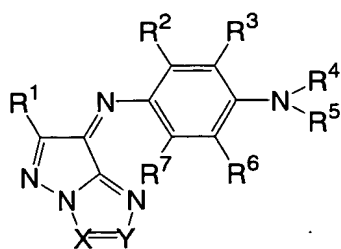
(2-3 a)



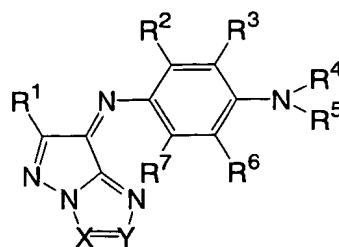
(2-3 b)



(2-4)



(2-5)



wherein in the formulae (2-1) to (2-5) X, Y, R¹, R², R³, R⁴, R⁵, R⁶, R⁷
 and R⁸ have the same meanings as defined above in the formula (1);
 wherein in the formula (2-1) R²⁰¹ and R²⁰² each represents a C₁₋₁₈ alkyl
 group having a substituent group, the substituent group is at least one
 member selected from the group consisting of a heterocyclic group,
 cyano, -OR¹⁴¹, -SR¹⁴², -CO₂R¹⁴³, -OCOR¹⁴⁴, -NR¹⁴⁵R¹⁴⁶, -CONR¹⁴⁷R¹⁴⁸, -
 SO₂R¹⁴⁹, -SO₂NR¹⁵⁰R¹⁵¹, -NR¹⁵²CONR¹⁵³R¹⁵⁴, -NR¹⁵⁵CO₂R¹⁵⁶, -COR¹⁵⁷, -
 NR¹⁵⁸COR¹⁵⁹ and -NR¹⁶⁰SO₂R¹⁶¹, and R¹⁴¹, R¹⁴², R¹⁴³, R¹⁴⁴, R¹⁴⁵, R¹⁴⁶, R¹⁴⁷, R¹⁴⁸,
 R¹⁴⁹, R¹⁵⁰, R¹⁵¹, R¹⁵², R¹⁵³, R¹⁵⁴, R¹⁵⁵, R¹⁵⁶, R¹⁵⁷, R¹⁵⁸, R¹⁵⁹, R¹⁶⁰ and R¹⁶¹ each
 represents independently a hydrogen atom, aliphatic group or aromatic
 group; wherein in the formula (2-2) R²⁰³ represents a C₁₋₁₀ substituted
 alkyl group; wherein in the formulae (2-3a) and (2-3b), R²⁰⁴, R²⁰⁵, R²⁰⁶ and
 R²⁰⁷ each represents independently a cyano or a group having no more
 than C₁₀₀ selected from the group consisting of an aliphatic group,
 aromatic group, heterocyclic group, -OR²¹¹, -SR²¹², -CO₂R²¹³, -OCOR²¹⁴, -
 NR²¹⁵R²¹⁶, -CONR²¹⁷R²¹⁸, -SO₂R²¹⁹, -SO₂NR²²⁰R²²¹, -NR²²²CONR²²³R²²⁴, -
 NR²²⁵CO₂R²²⁶, -COR²²⁷, -NR²²⁸COR²²⁹ and -NR²³⁰SO₂R²³¹, and R²¹¹, R²¹²,
 R²¹³, R²¹⁴, R²¹⁵, R²¹⁶, R²¹⁷, R²¹⁸, R²¹⁹, R²²⁰, R²²¹, R²²², R²²³, R²²⁴, R²²⁵, R²²⁶, R²²⁷,
 R²²⁸, R²²⁹, R²³⁰ and R²³¹ each represents independently a hydrogen atom,
 aliphatic group or aromatic group; wherein in the formula (2-4) at least

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cont

one of $R^1, R^2, R^3, R^4, R^5, R^6, R^7$ and R^8 has substituent groups represented by $-NR^{271}SO_2R^{272}$, two or more substituent groups represented by $-NR^{271}SO_2R^{272}$ are contained in the molecule, and R^{271} and R^{272} each represents independently a hydrogen atom, aliphatic group or aromatic group; and wherein in the formula (2-5) at least one of $R^1, R^2, R^3, R^4, R^5, R^6, R^7$ and R^8 has one or more water-soluble groups.

20. An ink jet recording method according to claim 18, wherein the ink has a wavelength of maximum absorption ($\lambda_{\max}(\text{nm})$) in a wavelength range from 510 to 560 nm; and when absorbance at λ_{\max} is regarded as 1, the absorbance is no less than 0.2 at ($\lambda_{\max} + 75\text{nm}$), and the absorbance is no more than 0.4 at ($\lambda_{\max} - 75\text{nm}$).

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